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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/338,520	06/23/1999	SUNGHO JIN	2925-0329P	1494

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EXAMINER

PATEL, ASHOK

ART UNIT PAPER NUMBER

2879

DATE MAILED: 07/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application N .

09/338,520

Applicant(s)

JIN ET AL.

Examiner

Ashok Patel

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 12 May 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-3,6,9-15 and 17-36 is/are pending in the application.
- 4a) Of the above claim(s) 23-35 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3,6,9-12,14,15,17-22 and 36 is/are rejected.
- 7) ☒ Claim(s) 13 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

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1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claims 1-3, 6, 9-12, 14, 15, 17-22 and 36 are rejected under 35 U.S.C. 102(e) as being anticipated by Saito et al (U.S.P. 6,124,666, of record).

Saito et al disclose applicant's claimed thermionic cathode having a substrate (1), an emissive layer (5) and a buffer layer (4). The claimed functional limitation "said buffer layer inhibiting interaction of ....." is narrative in form and does not carry any patentable weight. Under 35 U.S.C. 112, 6<sup>th</sup> paragraph, the functional language must be expressed in terms of means plus function, i.e. the functional limitation must be recited as "means for inhibiting interaction of....." in order

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to carry a patentable weight. In absence of positive structural limitation of the buffer layer, the claimed functional limitation cannot be realized.

Regarding claims 2, 3 and 36, Saito teaches the buffer layer altering the substrate by randomizing and miniaturizing the grain structure of the substrate (col. 6, lines 29-38).

Regarding claim 6, Saito teaches the buffer layer material dissolving further into the substrate to form an alloy with the substrate material (col. 6, lines 19-22).

Regarding claim 10, Saito further teaches the buffer layer material as a solid solution (col. 6, lines 11-14).

Regarding claim 11 and 12, Saito teaches the buffer layer including W, Mo and Ta (col. 3, lines 18-20).

Regarding claim 17, Saito teaches the buffer layer as an alloy (col. 6, lines 29-32).

Regarding claim 18, Saito teaches the buffer layer as an alloy of Ni and W having different crystalline structure (col. 6, line 19).

Regarding claim 19, Saito teaches the buffer as a grain growth (col. 6, lines 29-32).

3. Claims 1 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Buxbaum (of record).

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Regarding clam 1, Buxbaum discloses a thermionic cathode having a substrate (1), a buffer layer (3), and an emissive layer (2). The Examiner again does not give a patentable weight to the claimed functional limitation for reasons set forth earlier in this office action.

Regarding claim 20, Buxbaum teaches the buffer layer having at least one of Re, Hf, Os Ru along with alloys of these elements (col. 2, lines 50-53).

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saito et al (as applied to claim 1).

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Regarding claims 14 and 15, Saito does not teach the cathode used in a projection electron lithography system, or in the SCALPEL system. The applicant states that W Devolre teaches the SCALPEL electron lithography process requires a cathode with extremely small work function variation (page 3, lines 15-19).

Saito teaches that the buffer according to claim 1, helps to miniaturize the grain structure on the substrate (col. 6, lines 29-32), which inherently makes the work function more uniform across the cathode.

It would have been obvious to one of ordinary skill in the art to use Saito's cathode in a SCALPEL electron lithography system, since the system requires a cathode with a uniform work function and the buffer layer of Saito improves the uniformity of the cathode work function by miniaturizing the grain structure at the substrate.

6. Claim 13 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The Examiner responds to applicant's arguments/concern as follows.

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As to claim 1, applicant argues that the Examiner must properly consider the disputed non-narrative functional limitation. The Examiner maintains his position that the functional limitation is narrative in nature and does not carry a patentable weight since it is not supported by any positive structure. Presence of the narrative limitation in the claim is ok but simply will not carry any patentable weight. The Examiner does not reject or object to the presence of the narrative limitation within the claim. As mentioned earlier in the prior art rejection of claim 1, under 35 U.S.C. 112, 6<sup>th</sup> paragraph, the claimed functional limitation must be expressed as a means plus function.

Applicant requested to clarify status of claims 17-22. The Examiner realized that status of claims 17-22 was unclear in the previous office action. Claims 17-22 should have been mentioned as rejected instead of objected as being allowable.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ashok Patel whose telephone number is 703-305-4934. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be

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reached on 703-305-4794. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7382 for regular communications and 703-308-7382 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4900.



**Ashok Patel**  
**Primary Examiner**  
**Art Unit 2879**